

CLAIMS

What is claimed is:

1. A method of gracefully managing incoming access requests during an update event from a plurality of electronic devices in a communication network, each of the incoming access requests comprising at least one update-related parameter, the method comprising:
 - receiving each incoming access request at least temporarily;
 - monitoring and evaluating the incoming access requests using the at least one update-related parameter;
 - determining the availability of at least one device server to process the incoming access requests, based upon the at least one update-related parameter;
 - immediately processing incoming access requests upon determining that the at least one device server is available; and
 - communicating at least one message to electronic devices requesting access upon determining that the at least one device server is unavailable.
2. The method according to claim 1, wherein communicating comprises determining at least one alternate schedule for the electronic device to send a rescheduled access request upon determining that the at least one device server is unavailable for processing, based upon the at least one update-related parameter.
3. The method according to claim 1, wherein the at least one update-related parameter comprises at least one of device identification information, firmware identification information, software identification information, and information regarding other resources available in the electronic device.
4. The method according to claim 1, wherein the at least one message comprises a denial of service message.
5. The method according to claim 4, wherein the denial of service message comprises at least one reason for service denial.

6. The method according to claim 1, wherein determining the availability of the at least one device server to process the incoming access requests comprises evaluating at least one of an expected volume of requests, collected statistical information, user profile, request profile, and heuristics.

7. The method according to claim 1, further comprising graceful communication termination, wherein graceful communication termination comprises communicating an alternate schedule to send a rescheduled access request along with an explanatory denial of service message.

8. The method according to claim 1, wherein monitoring and evaluating the incoming access requests further comprises periodically retrieving a status information communication from one of the at least one device server and at least one of the plurality of electronic devices.

9. The method according to claim 1, wherein monitoring and evaluating the incoming access requests further comprises monitoring at least one network resource, operational status of the at least one device server, a volume of incoming access requests, and information regarding at least one of the plurality of electronic devices.

10. The method according to claim 1, further comprising selecting a candidate device server to process an incoming access request based upon monitored information regarding the at least one device server.

11. The method according to claim 1, wherein the at least one electronic device comprises a plurality of mobile electronic devices, and wherein the plurality of mobile electronic devices comprise at least one of a mobile cellular phone handset, personal digital assistant, pager, MP3 player, and a digital camera.

12. The method according to claim 1, wherein the at least one message comprises alternate schedule information, wherein the alternate schedule information comprises at least one of a time to re-submit an access request, a particularly time frame for re-submitting an access request, an amount of time that must elapse before re-submitting and access request, and a particular date for re-submitting an access request.

13. A method of gracefully managing incoming access requests during an update event from a plurality of electronic devices in a mobile electronic network, the method comprising:

evaluating the incoming access requests, the incoming access requests at least comprising at least one update-related parameter;

recognizing that an incoming access request is a rescheduled access request; and
fulfilling the rescheduled access request with higher priority than an original request.

14. The method according to claim 13, wherein the rescheduled access request is an incoming access request that was previously denied.

15. The method according to claim 13, wherein fulfilling the rescheduled access request with higher priority than an original request comprises advancing the rescheduled request in a processing queue.

16. The method according to claim 13, wherein fulfilling the rescheduled access request with higher priority than an original request comprises immediately placing the rescheduled request in the processing queue.

17. The method according to claim 13, wherein the at least one mobile electronic device comprises a plurality of electronic devices, and wherein the plurality of electronic devices comprise at least one of a mobile cellular phone handset, personal digital assistant, pager, MP3 player, and a digital camera.

18. The method according to claim 13, wherein the at least one update-related parameter comprises at least one of device identification information, firmware identification information, software identification information, and information regarding other resources available in the electronic device.

19. An electronic device network adapted to gracefully manage incoming access requests during an update event, each of the incoming access requests comprising at least one update-related parameter, the electronic device network comprising:

at least one mobile electronic device having one of software and firmware, the mobile electronic device being adapted to be communicatively coupled to the electronic device network;

an access control unit;

at least one device server operatively coupled to the access control unit; and

a memory operatively coupled to the at least one device server, wherein the access control unit is adapted to immediately process and manage incoming information access requests from the at least one electronic device.

20. The electronic device network according to claim 19, wherein the at least one mobile electronic device comprises a plurality of electronic devices, and wherein the plurality of electronic devices comprise at least one of a mobile cellular phone handset, personal digital assistant, pager, MP3 player, and a digital camera.

21. The electronic device network according to claim 19, wherein the at least one device server comprises a plurality of device servers adapted to dispense updates to a plurality of update requesting electronic devices.

22. The electronic device network according to claim 19, wherein the access control unit is adapted to determine an incoming access request volume at the at least one device server and ability of the at least one device server to service additional incoming access requests.

23. The electronic device network according to claim 19, further comprising a monitoring unit adapted to monitor activity of the at least one device server.

24. The electronic device network according to claim 19, wherein the memory further comprises a plurality of updates retrievable by the at least one device server.

25. The electronic device network according to claim 19, wherein the at least one mobile electronic device comprises random access memory and non-volatile

memory, and wherein the non-volatile memory comprises at least one of an update application loader, update agent, download agent, and an operating system.

26. The electronic device network according to claim 19, wherein an incoming access request comprises at least one of device identification information, firmware identification information, software version information, and resource availability information.

27. The electronic device network according to claim 19, wherein the access control unit is adapted to determine priority of an incoming access request by recognizing that the incoming access request is one of a repeated and rescheduled access request.

28. The electronic device network according to claim 19, wherein the access control unit is adapted to determine one of whether a particular incoming access request requires immediate processing, whether the incoming access request requires deferment, and whether the incoming access request requires denial based upon operational status information gathered by monitoring the at least one device server and by evaluating the incoming access request.

29. The electronic device network according to claim 28, wherein upon determining that the incoming access request requires denial, the access control unit communicates at least one message to the mobile electronic device.

30. The electronic device network according to claim 29, wherein the at least one message to the mobile electronic device comprises a denial of service message.

31. The electronic device network according to claim 29, wherein the at least one message to the mobile electronic device comprises at least one reason for service denial.

32. The electronic device network according to claim 29, wherein upon determining that the incoming access request requires denial, the access control unit is adapted to determine at least one alternate schedule for the mobile electronic device to send a rescheduled access request.

33. The electronic device network according to claim 29, wherein upon determining that the incoming access request requires denial, the access control unit is adapted to communicate at least one alternate schedule to the mobile electronic device along with the at least one message.

34. The electronic device network according to claim 29, wherein a rescheduled access request is an incoming access request that was previously denied service, the rescheduled access request is determined to have higher priority than an original incoming access request, and wherein the rescheduled access request is one of immediately placed in the processing queue and advanced in the processing queue.

35. The electronic device network according to claim 29, wherein a rescheduled request is rapidly advanced in the processing queue.

36. The electronic device network according to claim 28, wherein upon determining that the incoming access request requires denial, a denial of service message is displayed at the mobile electronic device.

37. The electronic device network according to claim 28, wherein upon determining that the incoming access request requires denial, a message comprising instructions for re-attempting the denied access request at one of a specific time and after a period of time has elapsed and an explanatory message is displayed at the mobile electronic device.

38. The electronic device network according to claim 27, wherein the access control unit is adapted to at least briefly accept all incoming communications.

39. The electronic device network according to claim 19, further comprising a monitoring unit, the monitoring unit being adapted to gracefully manage denial of service for incoming access requests by:

- monitoring a volume of incoming access requests;
- determining device server availability;
- providing monitored information to the access control unit;

determining alternative schedules for mobile electronic devices to re-attempt access requests; and

communicating the alternative schedules to the mobile electronic devices.

40. The electronic device network according to claim 19, wherein the mobile electronic devices are adapted to one of:

repeat denied access requests without end-user intervention;

prompt an end-user to initiate repeated access requests;

display alternative schedules communicated to the mobile electronic device;

prompt the end-user to select a particular alternative schedule; and

autonomously repeat the access request according to a selected alternative schedule.

41. The electronic device network according to claim 19, wherein the at least one update-related parameter comprises at least one of device identification information, firmware identification information, software identification information, and information regarding other resources available in the electronic device.

42. A method of gracefully managing incoming access requests during an update event from a plurality of electronic devices in a communication network, each of the incoming access requests comprising at least one selection-related parameter, the method comprising:

receiving each incoming access request at least temporarily;

monitoring and evaluating the incoming access requests using the at least one selection-related parameter;

determining whether the incoming access requests is able to be processed based upon the at least one selection-related parameter;

immediately processing incoming access requests upon determining that processing the incoming access request is likely to be successful; and

communicating at least one message to the electronic device requesting access upon determining that processing the incoming access request is unlikely to be successful.

43. The method according to claim 42, wherein the at least one message communicated to electronic device comprises schedule information useable by the electronic device to re-attempt access employing another incoming access request.

44. The method according to claim 42, wherein the at least one message communicated to electronic device comprises a schedule information indicating a time when the communication network is likely to be able to provide one of requested information and data to the electronic device.